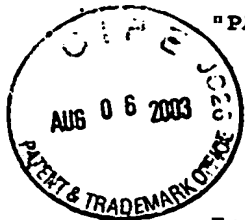


"PATENT"

Attorney Docket No. W9443-02



APPEAL BRIEF TRANSMITTAL FORM  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: CHAPMAN

Examiner: Ahmed, S.

Serial No.: 09/350,060

Group Art Unit: 1773

Filed: June 8, 1999

For: INK RECEPTIVE COATINGS AND RECORDING  
MEDIUM PREPARED THEREFROM

COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, VA 22313-1450

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TC 1700

CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8

Pursuant to 37 CFR §1.8, I hereby certify that I have a reasonable basis to expect that this correspondence will be deposited with the United States Postal Service on or before the date indicated as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

August 4, 2003  
Date

L. Scriver  
Signature

Sir:

Enclosed is the Appeal Brief in the above-noted application.

The item(s) checked below are appropriate:

- ☒ \$320.00 Fee for Appeal Brief.
- ☐ Petition for Extension of Time pursuant to 37 CFR 1.136 and 1.137 is hereby made if, and to the extent, required. The fee for this extension of time is calculated to be \$0 to extend the time for filings this paper until \_\_\_\_\_.
- ☒ Total Fee \$320.00.
- ☒ Charge \$320.00 to Deposit Account No. 07-1770.

- ☒ The Commissioner is hereby authorized to charge any additional fees under 37 CFR 1.16 and 1.17 which may be required by this paper, or credit any overpayment, to Deposit Account No. 07-1770. Two additional copies of this form are enclosed.

August 4, 2003

Date of Signature

William D. Bunch

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of : August 4, 2003  
CHAPMAN : Group Art Unit: 1773  
Filed: June 8, 1999 : Examiner: Ahmed, S.  
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For: INK RECEPTIVE COATINGS AND  
RECORDING MEDIUM PREPARED THEREFROM

RECEIVED  
AUG 08 2003  
TC 1700  
ACD  
#21  
9/12/03  
app  
JH

APPEAL BRIEF

Sir:

Pursuant to the Notice of Appeal filed on June 4, 2003, Applicant hereby submits this Brief and Appendix.

Real Party in Interest

W. R. Grace & Co.-Conn. ("Grace") is the real party at interest in this appeal. Applicant's agreement to assign the application to Grace is confirmed an agreement executed by Applicant on July 8, 1999.

Related Appeals and Interferences

The undersigned is not aware of any other appeals or Interferences related to this appeal.

CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8

Pursuant to 37 CFR §1.8, I hereby certify that I have a reasonable basis to expect that this correspondence will be deposited with the United States Postal Service on or before the date indicated, as First Class mail, in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

August 4, 2003

Date

*R. Scruin*

Signature

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### Status of Claims

Claims 1 – 30 attached in the Appendix are the subject of this appeal. Claims 1 – 30 are pending and finally rejected for the reasons stated in a Final Rejection mailed January 10, 2003. An Advisory Action mailed on July 9, 2003, has maintained these rejections.

### Status of Amendments

Claim 23 has been amended in this application by the Amendment filed October 9, 2002. No amendments have been requested after the January 10, 2003, Final Rejection.

### Summary of the Invention

Applicant's invention relates to a relatively high solids ink-receptive formulation which provides coated recording media, e.g., inkjet recording paper, having optimum ink-receptive properties. It is desirable to improve a coating formulation's ink-receptive properties by incorporating porous particles at relatively high solids contents. However, it is difficult to prepare such formulations due to the fact that as the amount of porous particles increases, the more difficult it is to disperse the particles. High amounts of porous solids generally result in relatively viscous dispersions which are more difficult to coat and thereby more difficult to utilize in automated coating equipment. Applicant believes that he has discovered a composition which addresses this problem, while at the same time maintains or improves ink receptivity and printability properties of the coating.

Specifically, Applicant's invention is a coating composition comprising (a) non-ionic latex polymer; (b) porous inorganic oxide having a pore volume in the range of 0.6 to 3.0 cc/g wherein the inorganic oxide further possesses a cationic charge; and (c) water soluble polymer, wherein the coating composition has a solids content of at least 20% by weight and has a Brookfield viscosity of 5000 centipose or less.

Applicant has discovered that by employing a non-ionic latex binder, one is able to prepare a coating composition comprising at least 20% by weight solids of porous inorganic oxides, i.e., those having a pore volume in

the above range, and especially those having a pore volume in the range of 0.9 to 2.5 cc/g. The advantages of employing this latex are shown by Applicant in his examples comparing his latex against latexes having a negative or positive charge.

Page 8, lines 13 – 20, describe that non-ionic vinylacetate polymers are suitable non-ionic latex polymers and that polyvinylacetate homopolymers are preferred. Page 8, lines 17 – 20, mention various references showing that the preparation of such polymers are known to those skilled in the art.

Suitable porous inorganic oxide particles having the above-mentioned pore volumes are described on page 12, line 22, through page 13, line 5. Page 13, line 6, mentions that silica gels are particularly preferred porous inorganic oxides. As mentioned above, and as described on page 14, lines 1 – 13, these inorganic oxides are cationic. The methods for preparing the same are described on page 14, lines 14 – 21. Preferred cationic inorganic oxides comprise alumina.

The water soluble polymers are described on page 10, lines 16 – page 12, line 20. It is mentioned on page 11, line 19, that a preferred water soluble polymer is polyvinylalcohol.

Applicant has also shown that when employing the above components to prepare an ink-receptive coating composition, one is able to obtain a relatively low viscous coating material that still provides for a relatively high solids content material that offers optimal printing formulations from the final dried coating. Incorporating similar porous inorganic oxide materials and at similar levels, Applicant compared his non-ionic latex versus a cationic shell copolymer (Example 2) and an anionic shell copolymer (Example 3). The results in Example 2 show that the cationic copolymer-based coating suffered from color appearance and ink drytime problems. Example 3 showed that the anionic copolymer gelled and was too viscous to coat. Advantages of cationic porous inorganic oxide are indicated in Table 1 on page 24 wherein it is shown that the cationic nature of the material not only reduces viscosity, but also improves printing performance. It is submitted that the prior art relied upon, and discussed later below, do not suggest a composition which can achieve the properties shown for Applicant's composition.

## Issues

(1) In the Final Rejection, claims 14 – 22 stand rejected under 35 U.S.C. §102(b) as being anticipated by EP Patent No. 0586846 B1 to Abe et al. (“Abe et al.”) As stated during earlier prosecution, and most recently stated in Applicant’s Appeal Brief received by the Patent Office on April 1, 2002, Abe et al. does not disclose cationic porous inorganic oxides having a pore volume in the range of 0.6 – 3.0 cc/g in combination with a non-ionic latex. As mentioned in Applicant’s earlier Appeal Brief filed March 20, 2002, Abe et al. discloses colloidal silica, and it is respectfully submitted that those of ordinary skill in the art would generally recognize that colloidal silica is not porous. There is an issue as to whether Abe et al. inherently anticipates these claims.

(2) In the Final Rejection, claims 1 – 3, 5 – 8, and 13 stand rejected under 35 USC §103 as being unpatentable over U. S. Patent 5,660,928 to Stokes et al. (“Stokes et al.”) in view of U.S. Patent 3,007, 878 to Alexander et al. (“Alexander et al.”). Stokes et al. discloses latex binders in combination with hydrophilic silica, but is silent as to the charge of the latex described therein and, therefore, there is an issue as to whether Stokes et al. discloses a non-ionic latex. The Examiner has taken the position that this silence in the disclosure is irrelevant and that all polyvinylacetates are equivalent. Stokes et al. also does not disclose or suggest the use of cationic porous particles.

Alexander et al. does disclose the manufacture of cationic silica particles. However, there is an issue as to whether Alexander et al. discloses porous cationic particles. There also is an issue of whether there is an express disclosure in either of these references to combine their teachings.

(3) In the Final Rejection, dependent claims 10-12 stand rejected over Stokes et al. in view of Alexander et al. and further in view of U. S. Patent 5,494,759 to Williams et al. (“Williams et al.”). Williams et al. discloses a cationic polymer recited in the above claims, but the issue in (2) above remains, i.e., whether combining Williams et al. with the references mentioned in (2) goes any further in suggesting Applicant’s invention.

(4) In the Final Rejection, claims 1-3, 5-8, 10, 13 and 23-30, stand rejected under 35 USC §103 as being unpatentable over Abe et al. The issue is similar to that in (1) above, specifically, whether Abe et al. discloses and suggests non-ionic latex in combination with cationic porous inorganic oxide particles.

(5) Dependent Claim 4 and Claims 4 and 9, are separately rejected under two separate combinations of references, including (a) a combination of Stokes et al. in view of Alexander and U.S. Patent 4,115,474 to Vassiliades et al. ("Vassiliades et al."), and (b) Abe et al. in view of Vassiliades et al., respectively. While Vassiliades et al. disclose microcapsules comprising a polyvinylalcohol shell encapsulating a polymeric core, the issue remains as above, i.e., whether the combination of the references above with Vassiliades et al. suggest core/shell non-ionic latex polymers which are suitable for making high porous solids content coating compositions.

#### Claim Groupings

Applicant requests that the claims be grouped as follows for consideration under this Appeal.

The first group contains claims 1-5, 7-17, and 19-30.

The second group of claims to be considered hereunder are claims 6 and 18. They recite preferred embodiments of the invention wherein the inorganic oxide is silica which has a pore volume in the range of 0.9 to 2.5 cc/g.

#### Arguments

##### **(1) §102(b) Rejection Based on Abe et al.**

The Final Rejection maintains the §102(b) rejection over Abe et al. with respect to claims 14-22. As mentioned above, Abe et al. discloses colloidal silica, and it is respectfully submitted that one of ordinary skill in the art would readily recognize that colloidal silica is typically not porous.

An example of the generally accepted definition of colloidal silica can be seen in the teachings of Alexander et al. (U.S. Patent No. 3,007,878). Alexander et al. is replete with references to colloidal silica as being very dense and not porous, such that nitrogen adsorption within the particles is negligible (see column 1, line 38; column 2, lines 23, 41 and 67; and column 3, lines 12 and 20).

Inherent anticipation requires that the missing descriptive material is "necessarily present," not merely probably or possibly present in the prior art. *Trinteo Industries v. Top U.S.A. Corp.*, 295 F.3d 1292, 1295, 63 USPQ2d 1597, 1599 (Fed. Cir. 2002) quoting *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999).

Additionally, facts asserted to be inherent in the prior art must be shown by evidence from the prior art. *Elan Pharmaceuticals, Inc. v. Mayo Foundation for Medical Education and Research*, 304 F.3d 1221, USPQ2d 1292 (Fed. Cir. 2001). *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) (criticizing the "hindsight syndrome wherein that which only the inventor taught is used against its teacher").

In the present Final Rejection, there has been no reference to the prior art, or otherwise, of information demonstrating that the pore volume recited in the present claims is "necessarily present" in Abe et al. (see page 3, lines 2-6). In fact, the reference made to cation-modification of colloidal silica as set forth in Alexander et al. (page 3, lines 7-11 of the Final Rejection) suggests that the colloidal silica of Abe et al. is similar to or identical to the typical and accepted definition of colloidal silica, i.e., that it is quite dense. Accordingly, the artisan would readily recognize that the colloidal silica of Abe et al. does not "necessarily" possess the pore volume recited in the present claims, and in contrast, even demonstrates that it does not possess any significant porosity.

Applicant's reference to Alexander et al., on page 14 of the subject specification, goes no further in showing that Abe et al. anticipates Applicant's invention. Applicant refers to Alexander et al. because he can use the techniques described therein to modify his inorganic oxide (see page 14, lines 14-21) where it refers to treatment of silica hydrogel (not colloidal) with



alumina. Applicant, however, goes beyond Alexander et al. by applying the techniques to porous inorganic oxides. It is also respectfully submitted that it is not seen where Abe et al. discloses a non-ionic latex. Accordingly, it is submitted that the subject matter of claims 14 – 22 is not inherently disclosed by Abe et al., and Applicant respectfully requests reversal of the §102 rejection.

**(2) §103 Rejection based on Stokes et al. in view of Alexander et al.**

The Final Rejection maintains that the above-mentioned combination of references render claims 1 – 3, 5 – 8, and 13 unpatentable under §103. Stokes et al. disclose a coated film or non-woven substrate wherein the coating comprises latex binder, hydrophilic silica, and a water soluble viscosity modifier. Stokes et al. mentions that poly(vinylacetate) is an example of a latex binder to be used for the coating (column 3, line 22). Stokes et al., however, does not disclose whether a charged polyvinylacetate is to be used, nor does Stokes et al. disclose that the hydrophilic silica contains a cationic charge. Alexander et al., on the other hand, does disclose a positively charged colloidal silica, and, it is the Examiner's position that the combination of those references renders Applicant's invention obvious. Applicant, however, respectfully requests reconsideration.

Briefly, it is respectfully submitted that Stokes does not expressly describe nor suggest non-ionic latexes. Mere mention of a polyvinyl acetate latex does not describe or suggest such a latex, especially in view of evidence (Rohm and Haas literature) submitted by Applicant in the March 19, 2001 Request for Reconsideration. Applicant has already submitted literature showing a variety of polyvinyl acetate latex polymers, of which only a portion are non-ionic. On page 3 of the Final Rejection, it is suggested that the term "polyvinyl acetate" suggests a certain chemical structure. Applicant submits that this is in error. Stokes fails to describe any specific structure with respect to polyvinyl acetate latex and is completely silent regarding the advantages of ionic or non-ionic polymers. It is, therefore, respectfully submitted that one of

ordinary skill in the art would consider polyvinyl acetate as generic without limitation to charge and that any charge could be applicable to a "polyvinyl acetate" latex. As mentioned in Applicant's previous Amendment dated October 9, 2002, the Encyclopedia of Chemical Technology, 4<sup>th</sup> ed., 1997, describes various polyvinyl acetate emulsions, i.e., latexes. It is known to the person of ordinary skill that the charge of a latex depends on surfactant or emulsifier used. It is stated therein that the most commonly used surfactants are anionic surfactants, e.g., anionic sulfates and sulfonates, in addition to cationic or non-ionic surfactants. It is submitted that this standard reference along with the Rohm and Haas literature, is more than ample evidence to support Applicant's position. On the other hand, the Examiner has not presented any evidence to support the position that one of ordinary skill would be motivated to specifically select a non-ionic latex. Regardless, Applicant has also submitted tests and examples rebutting any prima facie case of obviousness by showing that the latex charge is an important factor in Applicant's formulation vis-à-vis printing properties of the resulting coating (see page 31, lines 4-13, of the subject specification). Such advantages are simply not suggested by Stokes et al.

As acknowledged by the Examiner, Stokes et al. also does not disclose cationic inorganic oxide particles. Alexander et al.'s disclosure is relied upon for taking that position. However, it is respectfully submitted that Alexander et al. discloses *colloidal* silica. It does not disclose or suggest porous silica. For example, Alexander et al. refers to dense spheres of silica in column 3, lines 11 and 20. Applicant has earlier submitted pages from Ralph Iler's "The Chemistry of Silica" to support this position. Indeed, Ludox<sup>®</sup> colloidal silica, a bulletin for which is also part of the record, has no internal surface area and those skilled in the art readily understand that this would mean that the bulletin is referring to non-porous materials. In support of that, Applicant refers to the pages from Iler stating that colloidal is generally non-porous if grown in alkaline solution and formed at elevated temperature, and further refers to U.S. Patents 2,573,743; 2,750,345; and 2,515,960. Alexander et al. mention, on column 2, lines 71-72, that these references describe preparing colloidal silica, and it is submitted that the general indication from those

patents is that the colloidal silica prepared therein is prepared at alkaline conditions. Accordingly, the evidence submitted by Applicant is that the processes which Alexander et al. refer to produce non-porous colloidal silica. The Examiner, on the other hand, maintains the particles are porous. It is respectfully submitted that the Examiner has provided no support other than speculation as to the porosity of silica described by Alexander et al.

It is also respectfully submitted that Stokes et al. does not disclose cationic porous inorganic oxide particles, and given that Alexander et al. discloses employing cationic colloidal silica, it is respectfully submitted that if Alexander et al.'s teaching is combined with Stokes et al.'s teaching, one of ordinary skill in the art would arrive at a coating formulation containing non-porous particles. There is simply no motivation or teaching in Stokes et al. or Alexander et al. to modify their teachings and utilize cationic non-porous particles in such formulation as is recited in the present claims. Moreover, even if Alexander et al. was combined with Stokes et al., as teaching the use of cationic non-porous particles, this would result in impermissible hindsight reconstruction since Alexander et al. emphasizes the use of cationic non-porous particles.

It is also submitted that there is no suggestion by either Stokes et al. or Alexander et al. to employ cationic particles in Stokes et al.'s formula. Stokes et al. is silent in column 3 as to whether hydrophilic silica has a positive charge. Alexander et al. does disclose positively charged colloidal silica, but discloses in column 7 that a primary use for the silica is as a ceramic binder. Stokes et al. does mention on column 7, lines 49 – 51, that the sol of charged silica can be used as a "coating agent," but it directs its suggestion to coating "negative" surfaces such as glass, thereby suggesting that the sol *per se* be used as protective coating. Needless to say, there is no suggestion by Alexander et al. to employ its silica particles in a latex formula so as to improve ink receptivity or reduce viscosity of the same. See Table 1 of Applicant's specification.

In view of the above, it respectfully submitted that the Examiner has failed to establish a *prima facie* case of obviousness of the subject matter recited in the above claims based on the above-mentioned combination of

references. Furthermore, in view of Alexander et al. suggesting the employment of cationic non-porous colloidal silica particles, it is respectfully submitted that even if one was to combine the teaching of the above-mentioned references, one would not even arrive at Applicant's invention. Accordingly, Applicant respectfully requests reversal of the above-mentioned rejection.

**(3) §103 Rejection based on Stokes et al. and Alexander et al. further in view of Williams et al.**

Dependent claims 10 – 12, recite embodiments of Applicant's invention which further comprise a water soluble cationic polymer (d) in addition to components (a), (b), and (c) mentioned above. However, it is respectfully submitted that in light of the deficiencies noted above with respect to Stokes et al. and Alexander et al., even if one was to combine the teachings of Williams with such references, one would not arrive at a high solids formulation comprising highly porous inorganic oxide particles in non-ionic latex binder. Accordingly, reversal of this rejection is also requested.

**(4) §103 Rejection Over Abe et al.**

Claims 1 – 3, 5 – 8, 10, 13, and 23 – 30 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Abe et al. Applicant, however, respectfully traverses. Applicant earlier indicated above that Abe et al. refers to colloidal particles and does not even remotely suggest or mention pore volume. Applicant has submitted evidence that those skilled in the art recognize such materials as being non-porous. There is simply no motivation or suggestion to utilize cationic porous particles. On page 5, section 6, the Office Action suggests that the silica in Abe et al. has the same composition and structure as recited in the present claims. One of ordinary skill in the art would readily recognize that just because a silica particle comprises the same or similar composition, it does not necessarily mean that the structure is also the same or similar. It is therefore respectfully submitted that the position

asserted in the Office Action is incorrect in stating that the pore volume of Abe et al.'s silica must have the pore volume recited in Applicant's claims 1 – 3, 5 – 8, 10, and 13. It is also respectfully submitted that Applicant has not pointed to any disclosure in Abe et al.'s patent, or any other disclosure or premise, which motivates one of ordinary skill in the art to determine optimum solids content, volume fraction, and weight ratio of non-ionic latex to modify inorganic oxides. Insofar as the Examiner is relying on personal knowledge, Applicant respectfully requests the Examiner submit the appropriate declaration in support of that position. Accordingly, Applicant respectfully requests reversal of the above-mentioned §103 rejection based on Abe et al.

**(5) Claims 4 and 9 Rejections Under §103**

The combinations of (a) Stokes et al. and Alexander et al., and (b) Abe et al., have been further combined with the Vassiliades et al. reference to reject claims 4 and 9. Vassiliades et al. discloses microcapsules comprising a polymeric shell of polyvinyl alcohol, which in turn encapsulates a polymeric core. The Examiner refers to column 2, lines 11 – 20, 67 – 68, and column 3, lines 22 – 25, in support of this position. However, it is respectfully submitted that Vassiliades et al. goes no further in suggesting the above-mentioned combination of porous inorganic oxide particles in combination with a non-ionic latex binder to produce a superior ink-receptive coating composition. At best, Vassiliades et al. discloses materials which could be combined with the materials described by the above-mentioned references (a) – (c). However, as noted above, those references neither disclose nor suggest all of the components of Applicant's coating composition. In summary, Vassiliades et al. go no further in establishing a *prima facie* case of obviousness under §103. Withdrawal and reversal of these three rejections is therefore requested.

The examiner bears the burden of establishing a *prima facie* case of obviousness, *In re Deuel*, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995), *In re Rijckaert*, 9: F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993); *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ 2d 1443, 1444 (Fed. Cir. 1992). Only if this burden is met does the burden of coming forward with rebuttal

argument or evidence shift to the applicant. *Rijckaert*, 9 F.3d at 1532, 28 USPQ2d at 1956. When the references cited by the examiner fail to establish a *prima facie* case of obviousness, the rejection is improper and will be overturned. *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

The combination of elements in a manner that reconstructs the applicant's invention only with the benefit of hindsight, is insufficient to present a *prima facie* case of obviousness. There must be some reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination. That knowledge cannot come from the applicant's invention itself. *Diversitech Corp v. Century Steps, Inc.*, 850 F.2d 675, 678-79, 7 USPQ2d 1315, 1318 (Fed. Cir. 1988); *In re Geiger*, 815 F.2d 686, 687, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1147, 227 USPQ 543,551 (Fed. Cir. 1985).

If examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent. See *In re Grabiak*, 769 F.2d 729, 733, 226 USPQ 870, 873 (Fed. Cir. 1985).

In the matter at hand, Applicant respectfully submits that the Final Rejection has set forth assertions based on assumptions unsupported by the references of record to supplement silences in the prior art. Moreover, there has been no suggestion or motivation mentioned in the Final Rejection with regard to the §103 rejections referenced therein that would lead one of ordinary skill in the art to the claimed invention. Rejections based on this type of analysis are impermissible and reversal of those rejections are respectfully requested.

In view of the above, Applicant earnestly solicits a notice indicating that the above rejections have been reversed and that claims 1-30 are allowable over the prior art cited by the Examiner.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "William D. Bunch". The signature is fluid and cursive, with a horizontal line extending from the end.

William D. Bunch  
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**W9443-02 - PENDING CLAIMS**

1. A coating composition comprising
  - (a) non-ionic latex polymer;
  - (b) porous inorganic oxide having a pore volume in the range of 0.6 to 3.0 cc/g wherein the inorganic oxide further possesses a cationic charge; and
  - (c) water soluble polymerwherein the coating composition has a solids content of at least 20% by weight and has a Brookfield viscosity of 5000 centipose or less.
2. A composition of claim 1 wherein (a) is polyvinyl acetate.
3. A composition of claim 2 wherein (a) is polyvinyl acetate homopolymer.
4. A composition of claim 2 wherein the polyvinyl acetate has a core and shell, further wherein the shell comprises polyvinyl alcohol.
5. A composition of claim 1 wherein the porous inorganic oxide is silica.
6. A composition of claim 5 wherein the silica has a pore volume in the range of 0.9 to 2.5 cc/g.
7. A composition of claim 5 wherein the silica has a coating comprising alumina.
8. A composition of claim 1 wherein the water soluble polymer is a member of the group consisting of polyvinyl alcohol, hydroxyethyl cellulose, methyl cellulose, dextrin, pluron, gelatin, starch, gum arabic, dextran, polyethylene glycol, polyvinyl pyrrolidone, polyacrylamide, polypropylene glycol and mixtures thereof.



9. A composition of claim 4 wherein the water soluble polymer is polyvinyl alcohol.
10. A composition of claim 1 further comprising (d) a water soluble cationic polymer.
11. A composition of claim 10 wherein (d) comprises quaternary ammonium.
12. A composition of claim 11 wherein (d) is a polydiallyl dimethyl ammonium chloride.
13. A composition of claim 1 wherein the solids content of the composition is in the range of about 25 to about 40% by weight.
14. A recording medium comprising a substrate and coating thereon wherein the coating comprises
- (a) non-ionic latex polymer;
  - (b) porous inorganic oxide having a pore volume in the range of 0.6 to 3.0 cc/g and possessing a cationic charge; and
  - (c) water soluble polymer.
15. A recording medium of claim 14 wherein (a) is polyvinyl acetate.
16. A recording medium of claim 15 wherein (a) is polyvinyl acetate homopolymer.
17. A recording medium of claim 14 wherein the porous inorganic oxide is silica.
18. A recording medium of claim 14 wherein the silica has a pore volume in the range of 0.9 to 2.5 cc/g.

19. A recording medium of claim 17 wherein the silica has a coating of alumina.

20. A recording medium of claim 14 wherein the water soluble polymer is a member of the group consisting of polyvinyl alcohol, hydroxyethyl cellulose, methyl cellulose, dextrin, pluran, gelatin, starch, gum arabic, dextran, polyethylene glycol, polyvinyl pyrrolidone, polyacrylamide, polypropylene glycol and mixtures thereof.

21. A recording medium of claim 14 further comprising (d) a water soluble cationic polymer.

22. A recording medium of claim 14 wherein the coating is present on the substrate in the range of 5 to 10 g/m<sup>2</sup>.

23. A high solids coating composition comprising

- (a) polyvinyl alcohol;
- (b) nonionic latex; and
- (c) surface-modified porous inorganic oxide

wherein the coating solids has a total volume fraction in the range of 0.25 to 0.50.

24. A coating according to claim 23 wherein the solids content is greater than 23% by weight.

25. A coating composition according to claim 23 further comprising dye mordant.

26. A coating composition according to claim 25 wherein the dye mordant is cationic polymer.

27. A coating composition according to claim 23 wherein the weight ratio of (b) to (a) is in the range of 0.2 to 5.0.

28. A coating composition according to claim 23 wherein the coating composition has a Brookfield viscosity of less than 2000 centipose.

29. A coating composition according to claim 23 wherein (b) comprises polyvinylacetate.

30. A coating composition according to claim 23 wherein the inorganic oxide is silica which has been modified by alumina.